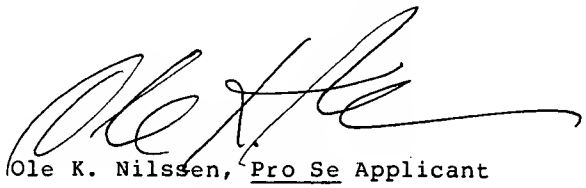
Re New Claims

(b) Exemplary new claim 14 includes a feature whereby a substantially sinusoidal voltage exists between the output terminal of one of the transistors (e.g., the collector of transistor Q2b of Fig. 1 of the specification) and the DC reference terminal (i.e., junction J).

This feature is neither disclosed nor suggested by any of the cited references.

If Examiner were to remain of a different opinion, he is requested to show exactly where and/or how this feature is described or suggested in or by the cited references.



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AMENDED CLAIMS in Serial No. 07/840,528

1. A ballast for a gas discharge lamp, comprising:

a source operative, between a first and a second DC output terminal, to provide a DC voltage of substantially constant magnitude; and

inverter-type power supply connected with the DC output terminals and operative to provide a high-frequency AC voltage between a first inverter output terminal and an inverter reference terminal; the high-frequency AC voltage being of a certain magnitude and a certain frequency; the certain frequency being substantially higher than the frequency of the power line voltage on an ordinary electric utility power line; the power supply including a tuned L-C circuit connected with the first inverter output terminal and the inverter reference terminal; the L-C circuit having a tank capacitor parallel-connected with a tank inductor and being resonant at or near said certain frequency; any high-frequency voltage existing between the inverter reference terminal and the first DC output terminal being of magnitude negligible in comparison with said certain magnitude.

2. The ballast of claim 1 wherein, between the first DC output terminal and the inverter reference terminal, there exists a short circuit for currents of said certain frequency.

3. The ballast of claim 1 wherein the power supply includes two transistors series-connected across a pair of inverter DC input terminals.

4. The ballast of claim 1 wherein the power supply includes: (i) a first and a second DC input terminal; and (ii) current-limiting inductor means connected in circuit between the DC input terminals and the DC output terminals.

5. The ballast of claim 4 wherein the current-limiting means includes an inductor having a first and a second winding; the first winding being connected between the first DC output terminal and the first DC input terminal; the second winding being connected between the second DC output terminal and the second DC input terminal.

6. The ballast of claim 1 wherein: (i) the power supply has a second inverter output terminal; and (ii) a voltage of magnitude and frequency equal to that of the high-frequency AC voltage exists between the second inverter output terminal and the inverter reference terminal.

7. The combination of claim 1 wherein the high-frequency AC voltage consists of periodically repeating voltage cycles, with each voltage cycle having a complete cycle period and including: (i) a sinusoidally-shaped negative voltage pulse; (ii) a sinusoidally-shaped positive voltage pulse; and (iii) a period of zero-magnitude voltage connecting each voltage pulse;

the combination being functional such that:

(a) the duration of each negative voltage pulse is approximately equal to that of each positive voltage pulse; and

(b) the duration of each period of zero-magnitude voltage is shorter than the duration of each voltage pulse.

8. The combination of claim 7 wherein the duration of each period of zero-magnitude voltage represents a significant fraction of the duration of each voltage pulse.

9. The combination of claim 7 wherein the duration of each period of zero-magnitude voltage represents more than about one tenth the duration of each voltage pulse.

10. An arrangement comprising:

a source operative to provide, between a first and a second DC output terminal, a DC voltage of substantially constant magnitude;

inverter-type power supply connected with the DC output terminals and operative to provide a first high-frequency AC output voltage between a first inverter output terminal and an inverter reference terminal; the first high-frequency AC output voltage being of a certain magnitude and of a certain frequency; the certain frequency being substantially higher than the frequency of the power line voltage on an ordinary electric utility power line; the power supply including an L-C circuit connected with the first inverter output terminal and the inverter reference terminal; the L-C circuit having a capacitor parallel-connected with an inductor; the parallel-connected capacitor and inductor being resonant at or near said certain frequency; any high-frequency voltage existing between the inverter reference terminal and the first DC output terminal being of magnitude negligible in comparison with said certain magnitude; and

(iv) gas discharge lamp connected in circuit with the first inverter output terminal and the inverter reference terminal by way of a reactive current-limiting means.

11. The arrangement of claim 10 wherein: (i) the power supply has a second inverter output terminal; (ii) a second high-frequency AC output voltage exists between the inverter reference terminal and the second inverter output terminal; and (iii) the magnitude and the frequency of the second high-frequency AC output voltage are substantially equal to those of the first high-frequency AC output voltage.

12. An arrangement comprising:

(i) a source operative to provide, between a first and a second DC output terminal, a DC voltage of substantially constant magnitude;

(ii) inverter-type power supply having a first and a second DC input terminal; the DC input terminals being connected with the DC output terminals by way of a current-limiting inductor means; the power supply being operative to provide a first high-frequency AC output voltage between a first inverter output terminal and an inverter reference terminal; the first high-frequency AC output voltage being of a certain magnitude and a certain frequency; the certain frequency being substantially higher than the frequency of the power line voltage on an ordinary electric utility power line; the power supply including an L-C circuit connected with the first inverter output terminal and the inverter reference terminal; the L-C circuit having a capacitor parallel-connected with an inductor; the parallel-connected capacitor and inductor being resonant at or near said certain frequency; any high-frequency voltage existing between the inverter reference terminal and the first DC output terminal being of magnitude negligible in comparison with said certain magnitude; and

(iii) gas discharge lamp connected in circuit with the first inverter output terminal and the inverter reference terminal by way of a current-limiting means.

13. The arrangement of claim 12 wherein the power supply is characterized by including: (i) a junction; (ii) a first transistor connected between the junction and the first DC input terminal; and (iii) a second transistor connected between the junction and the second DC input terminal.

14. A ballast for a gas discharge lamp, comprising:

a DC source operative to provide, between a pair of DC output terminals, a DC voltage of substantially constant magnitude; the DC source having a reference terminal; and

inverter circuit connected with the reference terminal as well as with the DC output terminals; the inverter circuit being characterized by: (i) including a periodically conducting transistor having a transistor output terminal; (ii) including a tuned L-C circuit connected in circuit with the transistor output terminal as well as with the reference terminal, which tuned L-C circuit has a tank capacitor parallel-connected with a tank inductor and is resonant at or near a given frequency; and (iii) being operative to provide a high-frequency AC voltage between the reference terminal and the transistor output terminal; the high-frequency AC voltage being of a certain waveform and a certain frequency; the certain waveform being, at least under some circumstances, substantially sinusoidal; the certain frequency being about equal to said given frequency and substantially higher than the frequency of the power line voltage on an ordinary electric utility power line.

cont. A2

15. The ballast of claim 14 wherein, for currents of frequency about equal to said certain frequency, a short short circuit effectively exists between the reference terminal and either of the DC output terminals.

16. The ballast of claim 14 wherein the inverter circuit is further characterized by drawing a DC current from the the DC source, with the instantaneous magnitude of the DC current being substantially constant during each complete period of the AC voltage.

17. A ballast for a gas discharge lamp, comprising:

a DC source operative to provide, between a pair of DC output terminals, a DC voltage of substantially constant magnitude; the DC source having a reference terminal; and

inverter circuit connected with the reference terminal as well as with the DC output terminals; the inverter circuit being characterized by: (i) including a periodically conducting transistor having a transistor output terminal; (ii) including a tuned L-C circuit connected in circuit with the transistor output terminal as well as with the reference terminal, which tuned L-C circuit has a tank capacitor parallel-connected with a tank inductor and is resonant at or near a given frequency; and

(iii) being operative to provide a high-frequency AC voltage between the reference terminal and the transistor output terminal; the high-frequency AC voltage being of a certain waveform and a certain frequency; the certain frequency being about equal to said given frequency and substantially higher than the frequency of the power line voltage on an ordinary electric utility power line; the certain waveform consisting of periodically repeating voltage cycles, with each voltage cycle having a complete cycle period consisting of: (i) a sinusoidally-shaped negative voltage pulse; (ii) a sinusoidally-shaped positive voltage pulse; and (iii) a period of zero-magnitude voltage connecting each voltage pulse.

18. The ballast of claim 17 wherein said period of zero-magnitude voltage is so short as to make said certain waveform substantially sinusoidal.

19. An arrangement comprising:

(a) a DC source operative to provide, between a pair of DC output terminals, a DC voltage of substantially constant magnitude; the DC source having a DC reference output terminal whose potential is substantially constant with respect to either of the two DC output terminals;

(b) inverter-type power supply having a pair of DC input terminals connected with the DC output terminals by way of a current-limiting inductor means; the power supply also: (i) having a DC reference input terminal connected with the DC reference output terminal; (ii) including a periodically conducting transistor having a transistor output terminal; and (iii) being operative to provide an AC output voltage between the DC reference input terminal and the transistor output terminal; the AC output voltage being of a certain waveform and a certain frequency; the certain frequency being substantially higher than the frequency of the power line voltage on an ordinary electric utility power line; the waveform being, at least under some circumstances, substantially sinusoidal; the power supply including an L-C circuit connected in circuit with the transistor output terminal and the DC reference terminals; the L-C circuit having a capacitor parallel-connected with an inductor; the parallel-connected capacitor and inductor being resonant at or near said certain frequency; and

(c) gas discharge lamp connected with the L-C circuit by way of a current-limiting means.